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(73) Proprietor: **MEMORYLINK, INC.**
Boca Raton, FL 33431 (US)

(72) Inventors:
• **ABEL, William, D. 6503 N. Military Trail
Boca Raton, FL 33496 (US)**
• **CALI, Thomas, D. 4210 South Ocean Blvd.
Highland Beach, FL 33487 (US)**

(74) Representative: **Bayliss, Geoffrey Cyril et al**
BOULT WADE TENNANT,
27 Fumival Street
London EC4A 1PQ (GB)

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EP 0 705 463 B1

EP 0 705 463 B1

Description

[0001] The present invention relates generally to systems and methods for automatically routing and directing communications and data, and, in particular, to a system and method for routing communications from a central processing unit to one of a plurality of remote locations.

[0002] As society becomes more and more spread out, the need for automated systems and methods for efficiently and equitably routing orders, data and communications from one location to one of a possible plurality of locations is ever growing. Further, businesses that are widely spread out need an efficient method of generating referrals or reciprocal business orders. The florist industry provides a good example of such a need. There are many florist shops located across the country. Consumers often wish to send flowers, plants, or other gift items to people located in a different city. Presently there are several ways in which such an order can be completed.

[0003] One common way is simply for a customer to call or visit a nearby florist with an order to be delivered in a different locality. These orders are accomplished when the local florist (the "sending" florist) telephones the details of the order to a "delivering" florist (situated in the locale of the recipient of the order) who fills the order and delivers the flowers to the recipient. This process is time consuming because the local florist usually consults a large directory of florists provided by a wire service organization of which it is a member to obtain the telephone number and coding information of the delivering florist.

[0004] There are presently six such wire service organizations: Florist Transworld Delivery Service, Redbook, Carik, Teleflora, American Floral Society and Florafax. Each of these wire service organizations acts as a "clearing house" for transactions between its members. Transacting orders through these wire service organizations requires the delivering florist to take the time to fill out a report of "incoming wire orders" and send this to the appropriate wire service organization to obtain payment for the services rendered. This process is also costly because the various wire service organizations charge a significant commission for their services in acting as a clearing house among the various member florists.

[0005] Some florists may attempt to generate referral or "reciprocal" orders by placing costly advertisements in which acknowledgment is made of the willingness to reciprocate business to florists who favor their shop with deliverable orders in the various membership directories published by the wire service organizations. The process is further encumbered by the substantial lag between the time an order is processed and the time each delivering florist receives payment. This is due to the fact that the wire service organizations generally send monthly or bi-monthly statements and settle their bills at that time.

[0006] Some florists may subscribe to the Mercury Network, which is owned by the Florist Transworld Delivery Service ("FTD"). The members of the Mercury Network rent computer terminal equipment from FTD and use this equipment to send and receive orders and other communications. The main difference between the manner in which florists complete orders using the Mercury Network and the manner of completing orders described above is that orders are transferred by use of a distributed network of computer terminals instead of by telephone. The equipment is costly, takes up valuable floor space, is cumbersome to operate and does not allow direct personal contact between the sending florist and the delivering florist. This lack of personal contact makes special design, handling or delivery instructions difficult to accommodate.

[0007] Since there are more than 40,000 florists in the United States today, florists lack a practical and efficient means for reciprocating orders. Except for major cities, it is unlikely that a delivering florist will generate an order for the sending florist's delivery area within a few days after the referral. Also, because the average florist receives between 25 and 40 orders each week from florists outside his delivery area (in addition to their other local business), it is difficult for a small business such as a florist to record all orders which were received from sending florists. The vast majority of florists are very small businesses and they do not have the time nor the resources to maintain a cross reference of all business referrals. For these reasons, the average florist will simply consult a membership directory (from one of the major wire service organizations) to accomplish an outgoing order.

[0008] Alternatively, consumers may order flowers through "Flowers Direct", a company which provides a direct telephone connection between the consumer and the delivering florist by means of AT&T's "INFOWORX" service. Subscribers to the Flowers Direct service pay significant amounts of money each quarter in the hopes that the company's advertising and toll-free telephone service will generate new business referrals. With this type of service, the telephone call is relayed by AT & T to the florist in the zip code nearest the recipient.

[0009] There is also a service called "800 Flowers" provided by a company which advertises its toll free number and acts as a "sending only" member of FTD. In this situation, the company takes the order at its computer center and then relays it through the FTD system, keeping a large commission for its efforts. Most florists do not have the resources for the advertising that is required to take advantage of such a marketing approach.

[0010] Automated systems exist as well for selecting a location to receive particular data. For example, US-A-4,797,818 discloses a computerized food order/delivery system in which food store preparation and delivery employees are freed from answering the telephone to take orders. The system includes a telephone center having a central com-

EP 0 705 463 B1

puter connected to a management station for normal use by management in monitoring the activity of the system including case flow, number of orders and inventory. An incoming call from a customer is directed by a telephone service to an available operator at one of a plurality of CRT's. The operator enters the customer address and order on an order entry form of the corresponding CRT. Based on the customer's telephone number, a customer identifier is determined from a market allocation database. The customer identifier may be the customer's home address, zip code, area code or telephone exchange number. The central computer automatically selects one of the stores that is to prepare the food and transmits the required information through modems on telephone lines to a printer in the selected store. This system does not disclose, however, a system which directs orders based on a reciprocity principle. Rather, the store to receive a particular order is chosen simply based on the location of that store in relation to the consumer.

[0011] US-A-4,567,359, discloses a system for automatically dispensing information, goods and services to a customer on a self-service basis. A plurality of self-service information and sales terminals are remotely linked to a central data processing center. The terminals accept orders, transmit the orders to the central data processing center, and deliver goods or services in the form of documents to the customer when the order is completed.

[0012] Information WEEK, pp. 18-19, March 21, 1988, discusses a national electronic system that enables a florist to transfer orders through the United States and Canada. The system employs terminals for order entry and a network for transferring the orders.

[0013] U.S. Patent No. 4,734,858 discloses a method and system for enabling a large number of consumers to place orders for goods or services with a data terminal. The users of the system are provided with hand-held terminals on which they may enter a supplier and a particular item to be ordered. After such data is entered, the terminals may be connected to telephone lines over which the order information may be sent to a local processing center. The orders are then routed to the appropriate supplier. This patent does not disclose, however, a system which directs orders based upon reciprocity among those sending and receiving orders. Rather, orders are directed to the supplier, which the consumer chooses on his or her data terminal.

[0014] What is, therefore, lacking in the art is a system and method for enhancing and ensuring reciprocity in the sending of orders among florists, and also a more efficient method and system for routing data and communications and making payment settlements. Such a system and method would ensure that merchants who are located in or who serve a specific area receive reciprocal (incoming) orders in proportion to their sending activity and in relation to the sending activity of other florist members who are located in or who serve the same specific area.

[0015] It is therefore an object of the present invention to provide a system and method for routing data and communications received at a central location to one of a plurality of remote locations based on a comparison of the frequency at which each of the remote locations sends data and communications over the system.

[0016] This invention provides a system for routing communications to one of a plurality of remote terminals comprising a central processing unit; a storage device operatively associated with the central processing unit to store first data identifying a plurality of remote terminals and second data associated with the number of times that each of the remote terminals has sent a communication to other remote terminals for a prior period; and a communication interface operatively associated with the central processing unit and the remote terminals for receiving communications from the remote terminals and forwarding the particular communication to the specific remote terminal; wherein a selector is provided operable in conjunction with the central processing unit to select a specific remote terminal to receive a particular communication based at least in part on the frequency at which each of the remote terminals has communicated with the central processing unit.

[0017] Thus the system for route communications to one of a plurality of remote sites through the central processing unit and a storage device store is a first set of data identifying the plurality of remote sites, and a second set of data indicating the frequency at which each of the plurality of remote sites communicates with the system. The system analyses the second set of data to select a specific remote site to receive a particular communication.

[0018] The invention also provides a method for routing communications comprising the steps of storing first data in a storage device operatively associated with a central processing unit, the first data identifying a plurality of remote terminals; storing second data in the storage device associated with the frequency at which each of the plurality of remote terminals has sent communications to other remote terminals; receiving a communication from one of the remote terminals at a central processor; wherein remote terminals that frequently send communications to other remote terminals are rewarded by selecting a particular remote terminal to receive the communication based at least in part on the frequency at which each of the remote terminals has sent communications to the other remote terminals; and forwarding the communication to the selected remote terminal.

[0019] The present invention advantageously provides a system and method for routing communications and data from a central processing unit to one of a plurality of remote locations to enhance and ensure reciprocity among users of the system. Thus, the invention is particularly well suited for industries in which businesses often receive referrals from like businesses in the same industry, but in different locales.

[0020] These and other features and advantages of the invention will be apparent upon consideration of the following detailed description of the presently preferred embodiments of the invention taken in conjunction with the appended

EP 0 705 463 B1

drawings.

FIG. 1 is a block diagram of a data/communication routing system made according to the preferred embodiment of the present invention; and

FIG. 2 is a flow chart outlining the steps performed by the preferred computer program to be executed on the system depicted in FIG. 1.

DETAILED DESCRIPTION OF THE PRESENTLY PREFERRED EMBODIMENTS

A. System Hardware

[0021] FIG. 1 is a block diagram representing a data/communication routing system 10 made in accordance with the presently preferred embodiment of the invention. In general, the data/communication routing system 10 operates to route data or communications to one of a plurality of possible locations. The data/communication routing system 10 shown in FIG. 1, preferably includes a central processing site 12, a plurality of first remote sites 14a, and a plurality of second remote sites 14b. In the preferred embodiment, the first remote sites 14a constitute floral shops who have subscribed to the data/communication routing system 10 and the second remote sites 14b constitute non-subscribers, such as individual consumers and non-subscribing merchants. Accordingly, the central processing site 12 operates to route data or communications received from either non-subscribers 14b or subscribers 14a to one of the plurality of subscribing floral shops 14a.

[0022] While the preferred embodiment of the present invention is utilized in the floral industry and uses a central processing site, the invention may be embodied in many different industries and in many different forms. For example, in the travel industry, travel agents are spread out and serve different locales. This industry, like the floral industry, will benefit from the present invention which provides a system and method for ensuring and enhancing referrals or reciprocal business.

[0023] The central processing site 12 preferably includes a computer system 16 and terminals 32 which are coupled to the computer system 16. The computer system 16 is coupled to a central communication interface 18, which permits the central processing site 12 to communicate with the remote sites 14a, 14b. The computer system 16 also preferably includes a central processing unit ("CPU") 20 for executing programs and controlling the operation of the computer system 16.

[0024] In the presently preferred embodiment of the invention, the computer system 16 comprises two computers manufactured by Digital Equipment Corporation: Model No. CL-44JT1-VB, Multiline DECvoice 24-line VAX 4000 Series Minicomputer Model 400; and Model No. CL-42HT1-VA, Multiline DECvoice 16-line VAX 4000 Series Minicomputer Model 200 Timeshare. The Model 400 computer is coupled to four Multiline DECvoice modules (model no. DTC05-SA) and the Model 200 is coupled to two such DECvoice modules. The DECvoice modules are configurable under software control to support digitized speech. The Model 200 and 400 computers preferably operate in parallel.

[0025] The communication interface 18 is preferably a digital Private Branch Exchange ("PBX"). In the preferred embodiment, the communication interface comprises a PBX model no. SX-2000, manufactured by Mitel Inc. of Florida. This PBX provides the network signalling capability to allow the transfer and conferencing of incoming telephone calls.

[0026] The terminals 32 are coupled to the CPU 20, preferably via a serial port, to allow terminal operators to transmit data to and receive data from the computer system 16. The terminals 32 also preferably include a screen (not shown). In the preferred embodiment, the terminals 32 are connected through a local area network 33, such as Ethernet or the like, and the system utilizes the PATHWORKS DOS software, provided by Digital Equipment Corporation, to establish and control the terminals 32. On the network 33, the terminals 32 are preferably served by a DECserver 700 (model no. DSRVW-CA) network server (not shown). Each of the terminals 32 also preferably comprise a DECstation 320sx base system (model no. DJ-PC443-03).

[0027] In the preferred embodiment, the computer system 16 further includes on-line memory 22, 24, and an off-line storage device 26. The on-line memory 22 preferably comprises Random Access Memory ("RAM") in the form of integrated circuits and the on-line memory 24 preferably constitutes a hard disk drive. In the preferred embodiment, the on-line memory 22, 24 is central to and shared by both the Model 200 and 400 computers. Also, the preferred embodiment utilizes "disk shadowing" in which the data stored in on-line memory 22, 24 is duplicated for back-up purposes. Such arrangements are well known in the art and further description is not required herein. The off-line storage device 26 is preferably a magnetic tape device. As those skilled in the art will appreciate, the computer system 16 of the present invention may utilize different memory devices than the ones disclosed herein.

[0028] In the preferred embodiment, the computer system 16 is also coupled to an Uninterruptable Power Supply ("UPS") system 29. The preferred UPS system is the 10KVA UPS System, model no. 4N-AEAL-BA, manufactured by Exide Corporation. This system prevents data which is stored in the on-line memory 22, 24 from being lost due to a power interruption. The UPS uses battery backups to power the computer system 16 down in phases in the event

EP 0 705 463 B1

of a power failure. Such UPS systems are well known in the art and need not be discussed further herein.

[0029] The computer system 16 is also preferably coupled to a telephone modem 28, which is operable to communicate over a switched telephone line 30. In the preferred embodiment, the telephone modem 28 comprises the DEC-modem V32, model no. DF296-DA, also manufactured by Digital Equipment Corporation. The telephone modem 28 preferably operates at 9600 BPS. The switched telephone line 30 also preferably can support a maximum transmission speed of 56 KB/second.

[0030] As those skilled in the art will appreciate, commercially available hardware other than that discussed above may be utilized. For example, rather than using the DEC Models 200 and 400 minicomputers which have a distributed CPU, the CPU 20 may be embodied in a microprocessor based system as is known in the art.

[0031] Each of the first and second remote sites 14a, 14b includes at least one local communication interface 34. These local communication interfaces 34 communicate with the central processing site 12, as described in detail below. In the preferred embodiment, the local communication interfaces 34 comprise telephones and/or facsimile machines, which are coupled with the central processing site 12 over the telephone lines preferably by dialing an "800" or toll-free telephone number. In the preferred embodiment, each of the remote sites 14a, 14b is capable of communicating with the central processing site 12 via a first toll-free number to send telephone orders and via a second toll-free number to send facsimile orders. As those skilled in the art will appreciate, the present invention is also not limited to the input and output devices described above. For example, computer terminals can be employed to provide input to and receive output from the system.

[0032] In the presently preferred embodiment, the central communication interface 18 is directly coupled to a telephone long distance provider. The long distance provider usually provides access to a digital switching system 19 capable of handling incoming toll-free telephone calls and outgoing Wide Area Telephone Service ("WATS"). The central communication interface 18 is coupled to such a long distance provider via a digital communications facility 21, such as a "T1" two-way carrier. This communications facility 21 is capable of transmitting digital voice and data signals, and of connecting directly to a PBX. Also, the central processing unit 20 is equipped to capture Automatic Number Identification ("A.N.I.") data of the calling party, which is output by the long distance provider, and to record this information in a storage medium. The A.N.I. data is encoded on incoming telephone calls and identifies the telephone number of the calling party.

[0033] Alternatively, the central communication interface 18 may be coupled to a telephone network through a central switch (not shown) located at the telephone company's nearest regional exchange office. In this alternative embodiment, the central communication interface 18 is coupled to the central switch via a digital link such as the "T1" two-way carrier mentioned above. The central switch is also preferably connected via a trunk line to a long distance provider for handling incoming toll-free telephone calls and outgoing WATS calls. Such arrangements are well known in the art and need not be further discussed herein.

B. System Data and Software

[0034] In the preferred embodiment of the present invention, four relational databases are stored in the computer system 16: (1) a "subscriber database", (2) a "selection database", (3) a "transaction database", and (4) a "zip code database".

1. Subscriber Database

[0035] The subscriber database is preferably stored in the on-line memory 24 and serves to provide information relating to each floral shop or other type of subscriber (first remote site 14a) that subscribes to the data/communication routing system 10. The subscriber database thus comprises a table of records for each subscriber, with each record preferably containing the fields shown in Table 1. The first thirty-three (33) fields of each record are preferably updated by manual entry from the terminals 32 and the last three fields are dynamically updated by a "look-up" function described below. The subscriber database is preferably indexed based on the "subscriber I.D." field.

TABLE 1

Fields	Description
1-15	zip codes served
16	subscriber I.D.
17	membership effective date
18	subscriber name

EP 0 705 463 B1

TABLE 1 (continued)

Fields	Description
19	subscriber address
20	subscriber primary telephone number
21	subscriber secondary telephone number
22	subscriber fax number
23	subscriber credit card number
24	subscriber credit card expiration date
25	contact name
26	type of business: proprietorship, partnership or corporation
27	proprietor's social security number
28	proprietor's date of birth
29	proprietor's residence address
30	year business started
31	number of retail locations
32	subscriber bank information
33	designation if "sending subscriber" only
34	total numbers of orders sent by subscriber
35	total number of orders received by subscriber
36	ratio of orders received to orders sent

2. Selection Database

[0036] The selection (or "reciprocity") database is preferably stored in the on-line memory 22. This database comprises a table of records, with each record containing a subset derived from some of the fields which form the records of the subscriber database. These records preferably have the fields shown in Table 2. The first nineteen (19) fields are based on a "look-up" function of the related fields in the subscriber database and the last three fields are dynamically updated by the "routing controller program" described below. The selection database is preferably indexed based on the "subscriber I.D." field.

TABLE 2

Fields	Description
1-15	zip codes served
16	subscriber I.D.
17	subscriber primary telephone number
18	subscriber secondary telephone number
19	subscriber fax number
20	total numbers of orders sent by subscriber (for all zip codes)
21	total number of orders received by subscriber (from all zip codes)
22	ratio of orders received to orders sent (all zip codes)

[0037] The "look up" functions referred to above are implemented by database application software and operate as follows. When new subscribers are added to the subscriber database, or when old subscribers are removed, or when changes are made to the data of an existing subscriber, such changes are automatically written to the selection database. Furthermore, as mentioned above, the last three fields of the selection database are dynamically updated. Thus,

EP 0 705 463 B1

the corresponding last three fields of the subscriber database are preferably updated periodically to coincide with the dynamically updated fields of the selection database. This periodic update of the subscriber database is also performed by the "look up" function.

3. Transaction Database

[0038] The transaction database is preferably stored in the on-line memory 24 and serves to track account billing and operational data. The transaction database is stored in a table of records, with each record preferably containing the fields shown in Table 3. The transaction database is preferably indexed based on the "receiving subscriber I.D." field.

TABLE 3

Fields	Description
1	sending subscriber I.D. (or, if non-subscriber, telephone number of calling party obtained from A.N.I. feature)
2	receiving subscriber I.D.
3	sending subscriber credit card #
4	expiration date
5	receiving subscriber credit card #
6	expiration date
7	start time
8	completion time of call
9	length of call (in minutes to nearest tenth of minute)
10	# of orders sent by sending subscriber
11	# of orders received by sending subscriber
12	# of orders sent by receiving subscriber
13	# of orders received by receiving subscriber

4. Zip Code Database

[0039] The zip code database is also preferably stored in the on-line memory 24. The zip code database references street addresses and cities to their appropriate zip codes. In the preferred embodiment, the zip code database is stored in "read only" form because there is no need to continuously change the data contained in the zip code database.

5. System Software

[0040] In the preferred embodiment of the present invention, computer programs are also stored in the on-line memory 22. These computer programs execute on the computer system 16, and in particular on CPU 20, to implement the various tasks necessary to route incoming data or communications to their proper location. The computer programs preferably include application software which operates to route communications and orders received from either subscribers 14a or non-subscribers 14b to either on-site operators who tend to terminals 32 or to one of the plurality of subscribing floral shops 14a. The computer programs also include operating system software for tracking the start times, completion times, and length of telephone calls on the system and for keeping counts of system usage, such as the number of telephone calls received by the hour and by the day.

[0041] The computer programs preferably include a "routing controller program" for processing and routing data, communications and/or orders, and for selecting which one of the plurality of first remote sites 14a is to receive a particular communication or order. In the preferred embodiment, the routing controller program utilizes voice application software and hardware which allows the computer system 16 to interact with callers by outputting voice messages and receiving digital input via touch-tone signalling. In the presently preferred embodiment, the routing controller program is implemented with the DECVoice software (model no. QAVFUAA-H5), provided by Digital Equipment Corporation, together with suitable relational database application software.

[0042] The voice application software of the preferred embodiment is created using the DECVoice Builder For VMS

EP 0 705 463 B1

software. In the preferred embodiment, the Model 400 computer utilizes the VAX/VMS TK50 (model no. QA-001AA-H5) operating system software and the Model 200 computer utilizes the VAX/VMS EXT MDDS TK50 (model no. QT-001AA-E5) operating system software. As those skilled in the art will appreciate, other suitable computer languages and software systems can be employed and will vary depending on the host computer system 16 selected.

5 [0043] According to the preferred embodiment of the invention, communications are routed so that the subscribers 14a who have the lowest relationship of number of orders received to number of orders sent receive priority for orders directed to their locality. Thus, the data/communication routing system ensures that subscribers 14a receive reciprocal orders for orders referred to merchants in different localities. A flow chart of the presently preferred steps to be implemented by the routing controller program is outlined in FIG. 2.

10 [0044] In the preferred embodiment, the data/communication routing system 10 may be accessed in any of four different ways. As indicated at program entry points 50 and 52 in FIG. 2, the system may be accessed by telephones or facsimile machines located at the subscribing members (first remote sites 14a) or at non-subscribing merchants (second remote sites 14b) using toll-free telephone numbers. As indicated at program entry points 54 and 56, the system may also be accessed by individual consumers (second remote sites 14b) through telephone or facsimile machines using toll-free telephone numbers different than the numbers used by subscribers or non-subscriber merchants.

15 [0045] Program entry point 50 indicates the starting point of the processing of telephone transmissions from the subscribing members (first remote sites 14a) or from non-subscribing merchants (second remote sites 14b). When the communication interface 18 receives a telephone transmission, the routing controller program operates to provide the caller with pre-recorded verbal messages which instruct the caller. (Such pre-recorded verbal messages are referred to in the art as "voice prompting" the caller.) The program first identifies the caller at step 58 by using the "A.N.I." feature provided by the long distance carrier. If the telephone number encoded on the incoming telephone call matches the telephone number of a record in the selection database, then the program proceeds to step 62. If a match for the retrieved telephone number is not found, the caller is voice prompted at step 60 to enter his or her subscriber identification account code using the touchtone capabilities of his or her phone. Thus, telephone calls from non-subscribing merchants will always be directed to step 60.

20 [0046] In the preferred embodiment, each subscriber is assigned a five digit account code at the time of subscription. These numbers are preferably assigned sequentially so that older members have lower account codes. The program checks the validity of the inputted subscriber identification account code by comparing it with the "subscriber I.D." fields of the records in the selection database. If no match is found, the entry is invalid. If the subscriber identification account code that was entered is invalid, or if the entry was not a touchtone multi-frequency signal, or if no entry is made within five seconds, the caller is directed to an operator at step 61. Non-subscribing merchants, however, will always be directed to operators as indicated at step 61. The operators will preferably attempt to convince such non-subscribers to subscribe to the system.

25 [0047] If the inputted subscriber identification account code entry is valid, the program proceeds to step 62. At step 62, the caller is voice prompted to enter the five digit zip code of the locale where the order is to be delivered. The program checks the validity of the inputted zip code by comparing it to the zip code fields in the records of the selection database. If no match is found, the inputted zip code is invalid. If the computer receives an invalid zip code or if no entry is made within five seconds, the caller is directed to an operator at step 61. If the zip code entry is valid, the program proceeds to step 64 where the program begins the process of selecting which subscriber (first remote site 14a) is to receive the present communication.

30 [0048] At step 64 the routing controller program searches the selection database and selects all records for subscribers that serve the zip code entered by the caller. This is accomplished by selecting those subscriber records of the selection database which contain a zip code that matches the zip code entered by the caller.

35 [0049] At step 66, the program sorts the selected records based on the "ratio of orders received to orders sent" field. These selected records are sorted in order from the lowest ratio to the highest ratio. In the case of a tie, the selected record with more orders sent is placed first. If two selected records show identical ratios and orders sent, the record with the lower subscriber identification account code (the older subscriber) is placed first. Alternatively, the program may use some other basis to deal with ties. After this record sort is completed, the first record from the sorted list is selected at step 68. This record represents the subscriber in the selected zip code with the lowest ratio of orders received to orders sent.

40 [0050] At step 70 of FIG. 2, the routing controller program causes the communication interface 18 to "outpulse" (i. e., dial the telephone number of) the "subscriber primary telephone number" stored within the record selected from the sorted list over a dedicated WATS line. As indicated at step 72, if no party answers within five rings, the caller is routed to an operator at step 61. If a connection is made, the computer system 16 disconnects from the call, the caller is placed in direct communication with the selected subscriber via a conferencing bridge on the PBX and the program proceeds to step 78.

45 [0051] As indicated at step 72, if a busy signal is detected, the "subscriber secondary telephone number" field of the

EP 0 705 463 B1

record selected from the sorted list is accessed and the communication interface 18 outputs the telephone number contained therein over a dedicated WATS line at step 74. (If no number is stored in the "subscriber secondary telephone number" field, the next record in the sorted list is selected at step 68 and the above process is repeated. However, if the end of the list has been reached, the caller is directed to an operator at step 61.) As shown at step 76, if a connection is made, the computer system 16 disconnects from the call, the caller is placed in direct communication with the selected subscriber via a conferencing bridge on the PBX and the program proceeds to step 78.

[0052] As shown at step 76, if there is no answer after five rings, or if a busy signal is detected, the next record of the sorted list is selected at step 68 and the above process is repeated. As shown at step 68, if the end of the sorted list of records has been reached without achieving a telephone connection, the caller is directed to an operator at step 61.

[0053] At step 78, the selection database is updated for both the receiving subscriber and the sending subscriber to reflect the new order that was sent and received, and the resulting new ratios. However, the selection database is only updated for the receiving subscriber when the caller is a non-subscribing merchant.

[0054] Thus, in the preferred embodiment, the data/communication routing system 10 operates to route floral orders based on the ratio of the number of orders received by a subscriber to the number of orders sent by that subscriber. The following example illustrates how the routing controller program operates.

[0055] As noted above, the routing controller program, upon identifying a caller and receiving a zip code entry, searches the selection database for those subscribers who serve the inputted zip code. For the purposes of this example, the subscribers identified in Table 4 are retrieved via this search:

TABLE 4

I.D. #	Orders Rec'd	Orders Sent	Ratio
59664	2	4	50%
67345	3	5	60%
74322	3	7	43%
87449	5	10	50%

After the list in Table 4 is sorted by the routing controller program, subscriber #74322 will be the first to receive the next communication because it has the lowest ratio. The second choice is subscriber #87449, which is tied with subscriber #59664 for the second lowest ratio, but has a higher number of orders sent. Subscriber #59664 is third, followed by subscriber #67345.

[0056] After a telephone call is completed and the selection database has been updated, a record of the call details and billing information is written to the transaction database, as indicated at step 80. The data required to perform this step is obtained from the record of the sending and receiving subscribers as contained in the subscriber and selection databases, and from the operating software which records the start time, completion time, and length of the call. If the sender is a non-subscribing merchant, the telephone number of the calling party is entered in the "sending subscriber I.D." field and the "sending subscriber credit card #" field is left empty.

[0057] When a caller is routed to an operator at step 61, the caller is placed in communication with an operator who operates one of the terminals 32. When a call is transferred to an operator, the subscriber database record of the caller is preferably displayed on that operator's terminal 32. The record is located using either the telephone number which was retrieved by the A.N.I. feature or the subscriber identification account code entered by the caller.

[0058] The operators are preferably capable of accessing any of the databases stored in the computer system 16 using their terminals 32. After completing any necessary data entry, the operators have the capability of releasing the call back to the routing controller program for outbound completion of the call. Where outbound completions are attempted, but there is no answer after five rings (as indicated at steps 68 and 72), the operator may personally take the order information. The operator will then relay the order to the selected subscriber when that subscriber can be contacted. Alternatively, the operator may relay the order to a non-subscriber if necessary. In the preferred embodiment, the operators also have the capability to override the selection process and cause a call to be forwarded to a location other than the one selected by the routing controller program.

[0059] The present invention operates in substantially the same manner as described above when accessed by a facsimile machine (program entry point 52) located at a subscribing member 14a or a non-subscribing merchant 14b. However, a different toll-free telephone number is preferably provided for such facsimile communications. In the preferred embodiment, the facsimile user utilizes the touchtone capabilities of the facsimile machine to input the necessary database information.

[0060] After this data is properly entered, the system operates in the same manner as described above. The only

EP 0 705 463 B1

difference, however, is that at step 70 the routing controller program causes the communication interface 18 to output the telephone number stored in the "subscriber fax number" field of the selected record. In addition, there is no need for step 74. As shown at step 72, for facsimile transmissions, when a busy signal is encountered, the next record of the sorted list is accessed at step 68. After a connection is made, the routing controller program causes the central communication interface 18 to send an "F tone" to the sending facsimile machine at step 73. An "F tone" signals the facsimile machine to begin sending its transmission in a manner generally known in the art. The computer system 16 then disconnects from the call, allowing the facsimile transmission to be sent.

[0061] In an alternative embodiment, the routing controller program does not voice prompt the facsimile user, but receives the subscriber identification account code and zip code by digitally reading a form which is faxed from the user. In this embodiment, a pre-printed form, having spaces for the user to enter a subscriber identification account code and a zip code, is sent via facsimile to the central communication interface 18. In this embodiment, the computer system 16 is preferably equipped with software and hardware capable of interpreting the transmission to read both the subscriber identification account code and the zip code. Such software and hardware are well known in the art and need not be further described herein.

[0062] The information received via facsimile will be provided to the routing controller program, as indicated at steps 60 and 62. Once a connection is made, the routing controller program causes the central communication interface 18 to send an "F tone" to the sending facsimile machine as described above. The computer system 16 then disconnects from the call and allows the facsimile transmission to complete.

[0063] The present invention also operates in substantially the same manner when accessed by individual consumers 14b, by either telephone or facsimile machine. There are, however, several minor differences in the operation of the system. Separate toll-free telephone numbers are provided for consumer initiated telephone calls and facsimile transmissions. For consumer communications, after the telephone number of the calling party is captured by the A.N.I. feature at step 58, there is no need to compare this number with the selection database. Rather, the program automatically proceeds to step 62. The program then operates in substantially the same manner as for subscriber initiated communications.

[0064] At step 62, the caller is voice prompted to enter the zip code of the locale where the order is to be sent. The process of selecting a subscriber to receive the communication and of routing the communication to that subscriber is the same as described above. After the communication is completed, the selection database is updated at step 78. As in the case of a non-subscriber communication, however, the only record that can be updated is that of the receiving subscriber. At step 80, where a record of the order is written to the transaction database, the telephone number of the calling party (obtained from the A.N.I. feature) is entered in the "sending subscriber I.D." field, and the "sending subscriber credit card #" field is left empty.

[0065] With the exception of the several differences described, facsimile communications from consumers 14b are handled in the same manner as described above for facsimile communications from subscribers 14a or non-subscriber merchants 14b.

[0066] Finally, when a non-subscriber is routed to an operator (step 61) the caller telephone number (obtained from the A.N.I. feature) is displayed on the operator's terminal 32. This is different from the subscriber record which is displayed for subscriber initiated communications.

[0067] Different manners of inputting data from telephones may also be utilized. For example, the computer system 16 is preferably equipped with voice recognition capabilities, as known in the art, so that callers from rotary telephones will be able to verbally indicate the zip code of the delivery locale. In an alternative embodiment, the present invention uses such voice recognition capabilities to receive all necessary inputs from the caller.

[0068] The present invention is also not limited to the specific steps depicted in the preferred flow chart of FIG. 2, nor is it limited to the specific manner of achieving reciprocity described above. Rather, different steps may be implemented.

[0069] The subscriber database, the selection database, and the transaction database are periodically downloaded to the off-line storage device 26 to maintain a system backup. In the preferred embodiment the off-line storage device 26 is a magnetic tape drive, and such a backup will occur at least once daily. Each backup is also preferably maintained on a storage medium for at least one year.

[0070] The invention also preferably includes application billing software stored in the computer system 16, which accesses the information stored in the transaction database. This billing software is employed to appropriately debit or credit the credit card accounts of the respective subscribers 14a who received and sent orders. This invoicing is achieved by using the modem 28 to send invoicing data to a credit card processing company, such as CYNET or NABANCO, over the switched telephone line 30. This invoicing data includes, among other requirements of the credit card processor, the relevant credit card information and the amounts of each debit or credit to the respective subscribers. In the preferred embodiment, such invoicing occurs daily.

[0071] The system of the present invention charges delivering subscribers a flat fee for each order that they receive. Sending subscribers are also credited with a flat fee, as a referral payment. Thus, the present invention eliminates the

EP 0 705 463 B1

need for a clearing house wire service to settle florist debts and credits. Payments are made immediately through each subscriber's credit card accounts.

[0072] The present invention encourages and enhances reciprocity in the sending of orders among businesses. The invention provides incentives for subscribing merchants to send or refer orders to other subscribing merchants and rewards those subscribing merchants who have the highest sending activity in relation to the sending activity of other subscribing merchants who serve the same locale. The present invention is advantageous in that most businesses do not have the time nor the resources to ensure reciprocity with like businesses from which they have received orders.

[0073] In the floral industry, the present invention also eliminates the need for maintaining cumbersome paperwork in filling out reports of orders delivered and in maintaining records of such orders. Florists using the present invention also receive payments faster and more efficiently. The present invention further eliminates the need for costly and space consuming computer equipment located on the florists' premises, as required by the FTD Mercury Network. The need for florists to advertise in wire service membership directories and the high costs associated therewith are also eliminated.

[0074] The invention may be embodied in other forms than those specifically disclosed herein.

Claims

1. A system for routing communications to one of a plurality of remote terminals comprising:

a central processing unit (20);
a storage device (22,24) operatively associated with the central processing unit to store first data identifying a plurality of remote terminals (14a,14b) and second data associated with the number of times that each of the remote terminals (14b) has sent a communication to other remote terminals (14a) for a prior period; and
a communication interface (18) operatively associated with the central processing unit and the remote terminals for receiving communications from the remote terminals and forwarding the particular communication to the specific remote terminal;

characterised in that a selector is provided operable in conjunction with the central processing unit to select a specific remote terminal to receive a particular communication based at least in part on the frequency at which each of the remote terminals has communicated with the central processing unit.

2. A system as claimed in claim 1, characterised in that the storage device (22,24) comprises Random Access Memory.

3. A system as claimed in claim 2, characterised in that the storage device (22,24) further comprises a hard disk drive.

4. A system as claimed in claim 1, characterised in that the communication interface (18) is operable to receive and forward telephone transmissions.

5. A system as claimed in claim 1, characterised in that the communication interface (18) comprises a telephone switching system operable to receive and forward orders comprising telephone transmissions.

6. A system as claimed in claim 4 or claim 5, characterised in that the plurality of remote terminals (14a,14b) identified by the first data comprise telephones.

7. A system as claimed in claim 1, characterised in that the communication interface (18) is operable to receive and forward facsimile transmissions.

8. A system as claimed in claim 7, characterised in that the plurality of remote terminals identified by the first data comprise facsimile machines.

9. A system as claimed in any of claims 4 to 8, characterised in that the communication interface (18) comprises a private branch exchange.

10. A system as claimed in claim 1, further comprising means for prompting and interacting with a sender of a communication.

EP 0 705 463 B1

11. A system as claimed in claim 1, further comprising means for identifying the origin of a communication received by the communication interface.
12. A system as claimed in claim 11, further comprising means for updating the first data.
13. A system as claimed in claim 1, characterised in that the storage device further stores billing data which identifies, for each communication sent through the system, the originator of the communication and the remote terminal which received the communication.
14. A system as claimed in Claim 1, characterised in that the communication interface includes means for receiving input data from a sender of a communication.
15. A system as claimed in claim 14, characterised in that the second data is further associated with the number of times each of the remote terminals has received a communication from the other remote terminals for the prior period; and in that the selector selects the specific remote terminal to receive the particular communication by comparing the input data with the first data to select a sub-group of the remote terminals from the plurality of remote terminals, and by comparing the ratio of the number of communications received to the number of communications sent for each of the remote terminals of the selected sub-group.
16. A system as claimed in claim 15, characterised in that said central processing unit (20) includes means for updating the ratio on-line.
17. A system as claimed in claim 16, characterised in that said means for updating the ratio on-line updates said ratio before said selector selects another remote terminal to receive another communication.
18. A system as claimed in claim 16, characterised in that said means for updating the ratio on-line updates said ratio after said communication interface (18) forwards the particular communication to the specific remote terminal and before said selector selects another remote terminal to receive another communication.
19. A system as claimed in claim 15, characterised in that said selector includes means for selecting the specific remote terminal of the selected sub-group which has the lowest ratio of the number of communications received to the number of communications sent.
20. A system as claimed in claim 1, characterised in that the second data is further associated with the number of times each of the remote terminals has received a communication from the system for a prior period.
21. A system as claimed in claim 20, characterised in that the communication interface includes means for receiving input data from the sender of a communication.
22. A system as claimed in claim 21, characterised in that the remote terminals are computer terminals, and in that the communication interface includes a network system for coupling together the computer terminals.
23. A system as claimed in claim 21, characterised in that the selector selects a specific remote terminal to receive a particular communication by comparing the input data with the first data to select a sub-group of remote terminals from the plurality of remote terminals, and by comparing the ratio of the number of communications received to the number of communications sent for each remote terminal of the selected sub-group.
24. A system as claimed in claim 1, characterised in that the remote terminals are associated with a plurality of remote shops; in that said second data is associated with the number of orders referred by each of the remote shops to the other remote shops for the prior period; and in that said selector includes means employing said first data for selecting a sub-group of the remote shops and means for selecting a particular remote shop from said sub-group to which to forward a particular order by analysing the second data for said sub-group.
25. A system as claimed in claim 1, characterised in that the selector selects the specific remote terminal to receive the particular communication based on a ratio, for each of the remote terminals, of frequency of orders received to frequency of orders sent for said each of the remote terminals.
26. A method for routing communications comprising the steps of:

EP 0 705 463 B1

storing first data in a storage device operatively associated with a central processing unit, the first data identifying a plurality of remote terminals;
storing second data in the storage device associated with the frequency at which each of the plurality of remote terminals has sent communications to other remote terminals;
5 receiving a communication from one of the remote terminals at a central processor;

characterised in that

remote terminals that frequently send communications to other remote terminals are rewarded by selecting a particular remote terminal to receive the communication based at least in part on the frequency at which each of the remote terminals has sent communications to the other remote terminals; and forwarding the communication to the selected remote terminal.

27. A method as claimed in 26, further comprising the step of receiving input data identifying the locale to which the communication is to be forwarded.

28. A method as claimed in claim 27, characterised in that the step of rewarding remote terminals that frequently send communications to other remote terminals, comprise the steps of: comparing the input data with the first data to select a sub-group of remote terminals from the plurality of remote terminals; and analysing the second data for each remote terminal of the selected sub-group of remote terminals to select a particular remote terminal.

29. A method as claimed in claim 26, characterised in that the communication to be routed comprises a telephone transmission.

30. A method as claimed in claim 26, further comprising the step: selecting the particular remote terminal to receive the communication based on a ratio, for each of the remote terminals, of frequency of orders received to frequency of orders sent for said each of the remote terminals.

Patentansprüche

1. System zum Routen von Kommunikationen zu einem aus einer Anzahl von entfernten Anschlüssen mit:

einer zentralen Verarbeitungseinheit (20),
einer Speichervorrichtung (22, 24), die operativ der zentralen Verarbeitungseinheit zugeordnet ist, um erste Daten zu speichern, die eine Anzahl von entfernten Anschlüssen (14a, 14b) bezeichnen, und zweite Daten, die der Anzahl von Malen zugeordnet sind, zu denen jeder der entfernten Anschlüsse (14b) eine Kommunikation zu anderen entfernten Anschlüssen (14a) in einer früheren Zeitspanne gesandt hat, und einer Kommunikationsschnittstelle (18), die operativ der zentralen Verarbeitungseinheit und den entfernten Anschlüssen zugeordnet ist, zum Empfangen von Kommunikationen von den entfernten Anschlüssen und zum Weiterleiten der bestimmten Kommunikation an dem speziellen entfernten Anschluß,

dadurch gekennzeichnet, daß ein Selektor vorgesehen ist, der in Verbindung mit der zentralen Verarbeitungseinheit betreibbar ist, um einen speziellen entfernten Anschluß zum Empfang einer bestimmten Kommunikation basierend mindestens teilweise auf der Frequenz auszuwählen, mit der jeder der entfernten Anschlüsse mit der zentralen Verarbeitungseinheit kommuniziert hat.

2. System nach Anspruch 1, dadurch gekennzeichnet, daß die Speichervorrichtung (22, 24) einen Freizugriffsspeicher aufweist.

3. System nach Anspruch 2, dadurch gekennzeichnet, daß die Speichervorrichtung (22, 24) weiterhin ein Festplattenlaufwerk aufweist.

4. System nach Anspruch 1, dadurch gekennzeichnet, daß die Kommunikationsschnittstelle (18) zum Empfang und zum Versenden von Telefonübertragungen betreibbar ist.

5. System nach Anspruch 1,

EP 0 705 463 B1

dadurch **gekennzeichnet**, daß die Kommunikationsschnittstelle (18) ein Telefonschaltssystem aufweist, das zum Empfang und zum Versenden von Aufträgen betreibbar ist, die Telefonübertragungen aufweisen.

- 5 6. System nach Anspruch 4 und 5,
dadurch **gekennzeichnet**, daß die Anzahl von entfernten Anschlüssen (14a, 14b), die durch die ersten Daten identifiziert werden, Telefone aufweisen.
- 10 7. System nach Anspruch 1,
dadurch **gekennzeichnet**, daß die Kommunikationsschnittstelle (18) zum Empfang und zum Versenden von Faksimileübertragungen betreibbar ist.
- 15 8. System nach Anspruch 7,
dadurch **gekennzeichnet**, daß die Anzahl von entfernten Anschlüssen, die durch die ersten Daten identifiziert werden, Faksimilegeräte aufweisen.
- 20 9. System nach einem der Ansprüche 4 bis 8,
dadurch **gekennzeichnet**, daß die Kommunikationsschnittstelle (18) einen Privatzweig austauscht aufweist.
- 25 10. System nach Anspruch 1, mit weiterhin Mitteln zum Anzeigen von und zum Zusammenwirken mit einem Sender einer Kommunikation.
- 30 11. System nach Anspruch 1, mit weiterhin Mitteln zum Identifizieren des Ursprungs einer durch die Kommunikationsschnittstelle empfangenen Kommunikation.
- 35 12. System nach Anspruch 11, mit weiterhin Mitteln zum Aktualisieren der ersten Daten.
- 40 13. System nach Anspruch 1,
dadurch **gekennzeichnet**, daß die Speichervorrichtung weiterhin Rechnungsdaten speichert, die für jede Kommunikation, die durch das System gesandt wurde, den Verursacher der Kommunikation und den entfernten Anschluß identifizieren, der die Kommunikation erhalten hat.
- 45 14. System nach Anspruch 1,
dadurch **gekennzeichnet**, daß die Kommunikationsschnittstelle Mittel aufweist zum Erhalten von Eingabedaten von einem Kommunikationssender.
- 50 15. System nach Anspruch 14,
dadurch **gekennzeichnet**, daß den zweiten Daten weiterhin eine Anzahl von Malen zugeordnet ist, zu denen jeder der entfernten Anschlüsse eine Kommunikation von den anderen entfernten Anschlüssen in der früheren Zeitspanne empfangen hat, und daß der Selektor den speziellen entfernten Anschluß für den Empfang der bestimmten Kommunikation auswählt durch Vergleichen der Eingabedaten mit den ersten Daten, um eine Untergruppe von entfernten Anschlüssen aus der Anzahl von entfernten Anschlüssen auszuwählen, und durch Vergleich des Verhältnisses der Anzahl von empfangenen Kommunikationen zu der Anzahl von Kommunikationen, die für jeden der entfernten Anschlüsse der ausgewählten Untergruppe gesendet wurden.
- 55 16. System nach Anspruch 15,
dadurch **gekennzeichnet**, daß die zentrale Verarbeitungseinheit (20) Mittel zum Aktualisieren des Verhältnisses on-line aufweist.
17. System nach Anspruch 16,
dadurch **gekennzeichnet**, daß die Mittel zum Aktualisieren des Verhältnisses das Verhältnis on-line aktualisieren, bevor der Selektor einen anderen entfernten Anschluß zum Empfang einer weiteren Kommunikation auswählt.
18. System nach Anspruch 16,
dadurch **gekennzeichnet**, daß das Mittel zum Aktualisieren des Verhältnisses on-line das Verhältnis aktualisiert, nachdem die Kommunikationsschnittstelle (18) die bestimmte Kommunikation zu dem speziellen entfernten Anschluß sendet und bevor der Selektor einen anderen entfernten Anschluß zum Empfang einer anderen Kommunikation auswählt.

EP 0 705 463 B1

19. System nach Anspruch 15,
dadurch **gekennzeichnet**, daß der Selektor Mittel aufweist zum Auswählen des speziellen entfernten Anschlusses der ausgewählten Untergruppe, der das geringste Verhältnis der Anzahl von empfangenen Kommunikationen zu der Anzahl gesendeten Kommunikationen aufweist.
20. System nach Anspruch 1,
dadurch **gekennzeichnet**, daß den zweiten Daten weiterhin die Anzahl von Malen zugeordnet ist, zu denen jeder der entfernten Anschlüsse eine Kommunikation von dem System in einer früheren Zeitspanne empfangen hat.
21. System nach Anspruch 20,
dadurch **gekennzeichnet**, daß die Kommunikationsschnittstelle Mittel zum Empfangen von Eingabedaten von einem Kommunikationssender aufweist.
22. System nach Anspruch 21,
dadurch **gekennzeichnet**, daß die entfernten Anschlüsse Computerterminals sind und daß die Kommunikationsschnittstelle ein Netzwerksystem zum Vernetzen der Computerterminals aufweist.
23. System nach Anspruch 21,
dadurch **gekennzeichnet**, daß der Selektor einen speziellen entfernten Anschluß zum Empfang einer bestimmten Kommunikation auswählt durch Vergleichen der Eingabedaten mit den ersten Daten, um eine Untergruppe von entfernten Anschlüssen aus der Anzahl von entfernten Anschlüssen auszuwählen, und durch Vergleich des Verhältnisses der Anzahl von empfangenen Kommunikationen zu der Anzahl von gesendeten Kommunikationen für jeden entfernten Anschluß der ausgewählten Untergruppe.
24. System nach Anspruch 1,
dadurch **gekennzeichnet**, daß den entfernten Anschlüssen eine Anzahl von entfernten Geschäften zugeordnet sind, daß den zweiten Daten die Anzahl von Aufträgen zugeordnet sind, die für jedes der entfernten Geschäfte zu den anderen entfernten Geschäften in der früheren Zeitspanne bezogen wurden, und daß der Selektor Mittel aufweist, die die ersten Daten einsetzen, zum Auswählen einer Untergruppe der entfernten Geschäfte, und Mittel zum Auswählen eines bestimmten entfernten Geschäfts aus der Untergruppe, an das ein bestimmter Auftrag gesandt wird, durch Analysieren der zweiten Daten für diese Untergruppe.
25. System nach Anspruch 1,
dadurch **gekennzeichnet**, daß der Selektor den bestimmten entfernten Anschluß für den Empfang der bestimmten Kommunikation basierend auf einem Verhältnis für jeden der entfernten Anschlüsse auswählt, basierend auf der Frequenz von empfangenen Aufträgen zu der Frequenz von gesandten Aufträgen für jeden der entfernten Anschlüsse.
26. Verfahren zum Routen von Kommunikationen mit den Schritten:
- Speichern erster Daten in einer Speichervorrichtung, die einer Zentralverarbeitungseinheit zugeordnet ist, wobei die ersten Daten eine Anzahl von entfernten Anschlüssen bezeichnen,
Speichern von zweiten Daten in der Speichervorrichtung, die der Frequenz zugeordnet sind, mit der jeder der Anzahl von entfernten Anschlüssen Kommunikationen an andere entfernte Anschlüsse gesendet hat,
Empfangen einer Kommunikation von einem der entfernten Anschlüsse an der zentralen Prozesseinheit,
- dadurch **gekennzeichnet**,
daß entfernte Anschlüsse, die häufig Kommunikationen an andere entfernte Anschlüsse senden, belohnt werden durch Auswahl eines bestimmten entfernten Anschlusses zum Empfang der Kommunikation basierend mindestens teilweise auf der Frequenz, mit der jeder der entfernten Anschlüsse Kommunikationen an die anderen entfernten Anschlüsse abgesandt hat, und Versenden der Kommunikation an den ausgewählten entfernten Anschluß.
27. Verfahren nach Anspruch 26, mit weiterhin dem Schritt des Empfangs von Eingabedaten, die den Ort identifizieren, an den die Kommunikation zu versenden ist.
28. Verfahren nach Anspruch 27,
dadurch **gekennzeichnet**, daß der Schritt des Belohnens der entfernten Anschlüsse, die häufig Kommunikationen an andere entfernte Anschlüsse aussenden, den Schritt aufweist:

EP 0 705 463 B1

Vergleichen der Eingabedaten mit den ersten Daten zum Auswählen einer Untergruppe von entfernten Anschlüssen aus der Anzahl von entfernten Anschlüssen und Analysieren der zweiten Daten für jeden entfernten Anschluß der ausgewählten Untergruppe von entfernten Anschlüssen, um einen bestimmten entfernten Anschluß auszuwählen.

29. Verfahren nach Anspruch 26, dadurch gekennzeichnet, daß die zu routende Kommunikation eine Telefonübertragung ist.

30. Verfahren nach Anspruch 26 mit weiterhin dem Schritt

Auswählen des bestimmten entfernten Anschlusses zum Empfang der Kommunikation basierend auf einem Verhältnis für jeden der entfernten Anschlüsse der Frequenz von empfangenen Aufträgen zu der Frequenz von Aufträgen, die für jeden der entfernten Anschlüsse gesandt wurden.

Revendications

1. Système de routage de communications vers l'un de plusieurs terminaux distants, comprenant :

une unité centrale de traitement (20),
un dispositif de mémoire (22, 24) associé pendant le fonctionnement à l'unité centrale de traitement pour la mémorisation de premières données identifiant plusieurs terminaux distants (14a, 14b) et de secondes données associées au nombre de fois où chacun des terminaux distants (14b) a émis une communication vers d'autres terminaux distants (14a) pendant une période précédente, et une interface (18) de communications associée pendant le fonctionnement à l'unité centrale de traitement et aux terminaux distants et destinée à recevoir les communications des terminaux distants et à transmettre la communication particulière au terminal distant spécifique,

caractérisé en ce qu'un sélecteur est incorporé afin que, en coopération avec l'unité centrale de traitement, il assure la sélection d'un terminal distant spécifique pour la réception d'une communication particulière d'après au moins en partie la fréquence à laquelle chacun des terminaux distants a communiqué avec l'unité centrale de traitement.

2. Système selon la revendication 1, caractérisé en ce que le dispositif de mémoire (22, 24) comprend une mémoire à accès direct.

3. Système selon la revendication 2, caractérisé en ce que le dispositif de mémoire (22, 24) comporte en outre une unité de disque dur.

4. Système selon la revendication 1, caractérisé en ce que l'interface de communications (18) est destinée à recevoir et transmettre des transmissions téléphoniques.

5. Système selon la revendication 1, caractérisé en ce que l'interface (18) de communications comprend un système de commutation téléphonique destiné à recevoir et transmettre des ordres comprenant des transmissions téléphoniques.

6. Système selon la revendication 4 ou 5, caractérisé en ce que les terminaux distants (14a, 14b) identifiés par les premières données sont des téléphones.

7. Système selon la revendication 1, caractérisé en ce que l'interface (18) de communications est destinée à recevoir et transmettre des transmissions de télécopie.

8. Système selon la revendication 7, caractérisé en ce que les terminaux distants identifiés par les premières données sont des télécopieurs.

9. Système selon l'une quelconque des revendications 4 à 8, caractérisé en ce que l'interface de communications (18) comprend un autocommutateur privé raccordé au réseau public.

EP 0 705 463 B1

10. Système selon la revendication 1, comprenant en outre un dispositif d'avertissement et d'interaction avec un émetteur.
- 5 11. Système selon la revendication 1, comprenant en outre un dispositif d'identification de l'origine d'une communication reçue par l'interface de communications.
12. Système selon la revendication 11, comprenant en outre un dispositif de remise à jour des premières données.
- 10 13. Système selon la revendication 1, caractérisé en ce que le dispositif de mémoire conserve en outre des données de facturation qui identifient, pour chaque communication émise dans le système, l'origine de la communication et le terminal distant qui a reçu la communication.
14. Système selon la revendication 1, caractérisé en ce que l'interface de communications comprend un dispositif destiné à recevoir des données provenant d'un émetteur d'une communication.
- 15 15. Système selon la revendication 14, caractérisé en ce que les secondes données sont en outre associées au nombre de fois où chacun des terminaux distants a reçu une communication des autres terminaux distants pendant la période antérieure, et en ce que le sélecteur sélectionne le terminal distant spécifique qui doit recevoir la communication particulière par comparaison des données d'entrée aux premières données pour la sélection d'un sous-
- 20 groupe de terminaux distants parmi l'ensemble des terminaux distants, et par comparaison du rapport du nombre de communications reçues au nombre de communications émises pour chacun des terminaux distants du sous-groupe choisi.
- 25 16. Système selon la revendication 15, caractérisé en ce que l'unité centrale de traitement (20) comporte un dispositif de remise à jour du rapport en ligne.
17. Système selon la revendication 16, caractérisé en ce que le dispositif de remise à jour du rapport en ligne remet à jour le rapport avant que le sélecteur sélectionne un autre terminal distant pour la réception d'une autre communication.
- 30 18. Système selon la revendication 16, caractérisé en ce que le dispositif de remise à jour du rapport en ligne remet à jour le rapport après que l'interface de communications (18) a transmis la communication particulière au terminal distant spécifique et avant que le sélecteur ne sélectionne un autre terminal distant pour la réception d'une autre communication.
- 35 19. Système selon la revendication 15, caractérisé en ce que le sélecteur comprend un dispositif de sélection du terminal distant spécifique du sous-groupe choisi qui a le plus faible rapport du nombre de communications reçues au nombre de communications émises.
- 40 20. Système selon la revendication 1, caractérisé en ce que les secondes données sont en outre associées au nombre de fois où chacun des terminaux distants a reçu une communication du système pendant une période antérieure.
21. Système selon la revendication 20, caractérisé en ce que l'interface de communications comporte un dispositif de réception de données d'entrée d'un émetteur d'une communication.
- 45 22. Système selon la revendication 21, caractérisé en ce que les terminaux distants sont des terminaux d'ordinateur, et en ce que l'interface de communications comprend un système à réseau destiné à coupler les terminaux d'ordinateur.
- 50 23. Système selon la revendication 21, caractérisé en ce que le sélecteur sélectionne un terminal distant spécifique pour la réception d'une communication particulière par comparaison des données d'entrée aux premières données pour la sélection d'un sous-groupe de terminaux distants parmi l'ensemble des terminaux distants, et par comparaison du rapport du nombre de communications reçues au nombre de communications émises pour chaque terminal distant du sous-groupe choisi.
- 55 24. Système selon la revendication 1, caractérisé en ce que les terminaux distants sont associés à plusieurs magasins distants, en ce que les secondes données sont associées au nombre d'ordres donnés par chacun des magasins distants aux autres magasins distants pendant la période antérieure, et en ce que le sélecteur comprend un dis-

EP 0 705 463 B1

positif utilisant les premières données pour sélectionner un sous-groupe de magasins distants et un dispositif destiné à sélectionner un magasin distant particulier parmi le sous-groupe auquel il envoie un ordre particulier par analyse des secondes données destinées au sous-groupe.

- 5 25. Système selon la revendication 1, caractérisé en ce que le sélecteur sélectionne le terminal distant particulier destiné à recevoir la communication particulière en fonction du rapport, pour chacun des terminaux distants, de la fréquence des ordres reçus à la fréquence des ordres émis pour chacun des terminaux distants.

26. Procédé de routage de communications, comprenant les étapes suivantes :

10 la mémorisation de premières données dans un dispositif de mémoire associé pendant le fonctionnement à une unité centrale de traitement, les premières données identifiant plusieurs terminaux distants, la mémorisation de secondes données dans le dispositif de mémorisation associé à la fréquence à laquelle chacun des terminaux distants a émis des communications vers d'autres terminaux distants, et
15 la réception d'une communication de l'un des terminaux distants à un processeur central,

caractérisé en ce que

20 les terminaux distants qui émettent fréquemment des communications vers d'autres terminaux distants sont récompensés par sélection d'un terminal distant particulier pour la réception de la communication d'après au moins en partie la fréquence à laquelle chacun des terminaux distants a émis des communications vers les autres terminaux distants, et la transmission de la communication au terminal distant sélectionné.

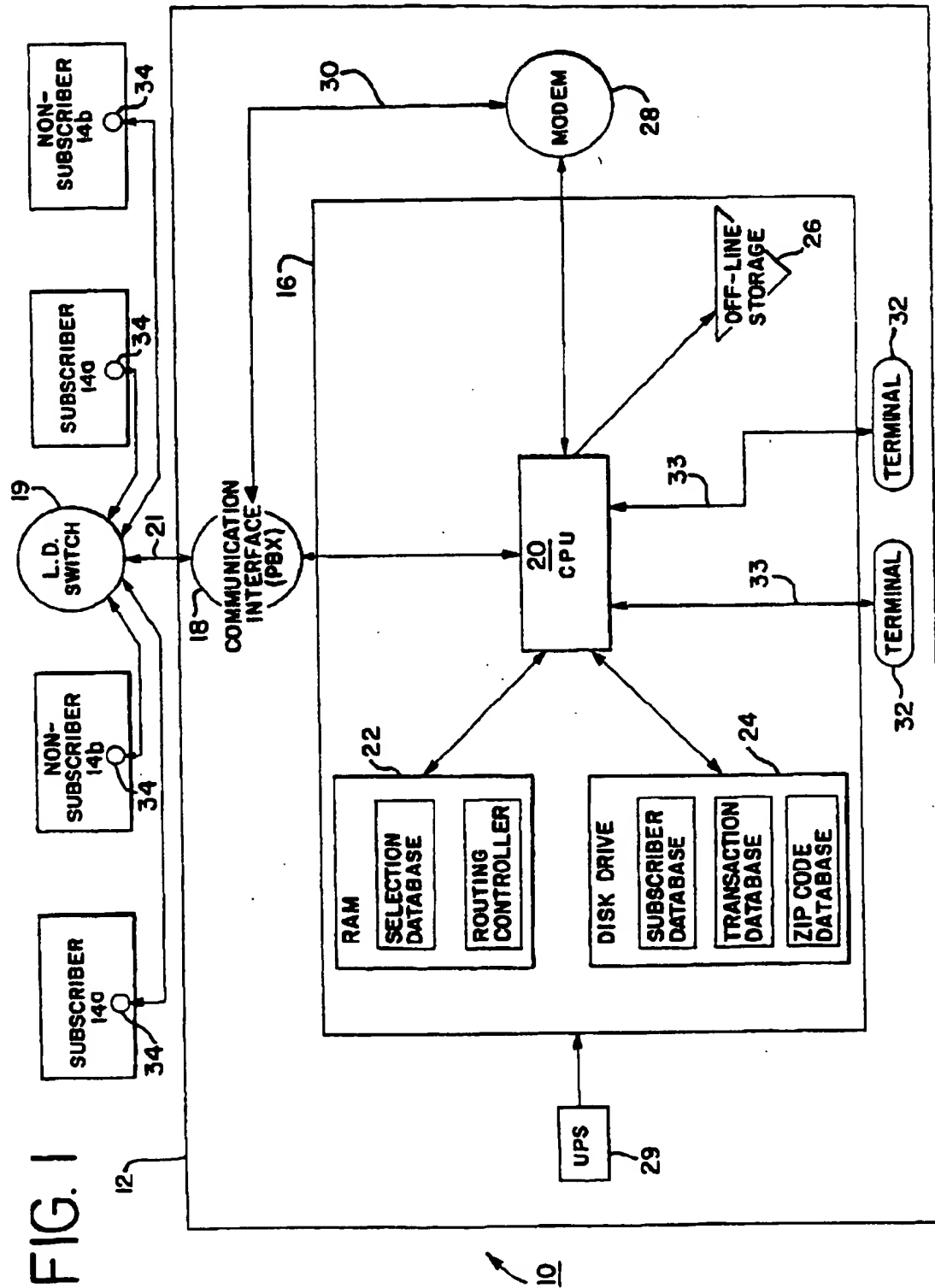
- 25 27. Procédé selon la revendication 26, comprenant en outre une étape de réception de données d'entrée identifiant l'emplacement auquel la communication doit être transmise.

- 30 28. Procédé selon la revendication 27, caractérisé en ce que l'étape de récompense des terminaux distants qui émettent fréquemment des communications vers d'autres terminaux distants comprend les étapes suivantes : la comparaison des données d'entrée aux premières données pour la sélection d'un sous-groupe de terminaux distants parmi l'ensemble des terminaux distants, et l'analyse des secondes données pour chaque terminal distant du sous-groupe choisi de terminaux distants pour la sélection d'un terminal distant particulier.

- 35 29. Procédé selon la revendication 28, caractérisé en ce que la communication à acheminer est une transmission téléphonique.

- 40 30. Procédé selon la revendication 26, comprenant en outre une étape de sélection d'un terminal distant particulier pour la réception de la communication d'après un rapport, pour chacun des terminaux distants, de la fréquence des ordres reçus à la fréquence des ordres émis pour chacun des terminaux distants.

EP 0 705 463 B1



EP 0 705 463 B1

